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METRO - CITY SKETCH

"...a sketchy mind thing, part hunch, part hope, part blueprint."

Lewis Mumford

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II. Summary

The following presentation has been organized in much the same order as the succession of thought which occurred during the sketch planning period. The first portion of the report deals with the forces of change and how they have acted both individually and in combination over time. The probable effects of these forces on the environment are then projected for the future. The next portion of the report is a description of the present Metro-city area and its problems. This discussion is followed by an explanation of the basic aspiration for the scheme and the nature of the physical image on a city and regional basis which was the product of this aspiration. A brief but more detailed explanation is then given for the nature of the city. This is followed by a description of initial programming steps necessary to the achievement of the plan.

The last portion of the report consists of two separate appendices. One of these is a discussion of physiographic forces within the Metro-city area. The other is a detailed presentation of one alternative plan suitable for the region.

III. Forces of Change

Identification of key forces that produce change

There are many forces that produce change. It is hypothesized that all of the key forces that produce change may be grouped as follows. First, apart from changes in demand, there are a number of forces which act to affect the production capability of a society or its productivity. Among these are:

Specialization - or the way in which the society is organized,
Spatial Arrangement - or the way in which activities arrange themselves to minimize the friction of space,
Technological Developments - or the substitution of capital for labor inputs, and
Labor Force Skills - or the proficiency of the workers.

Second, is the development of means of overcoming the friction of space which includes not only transport vehicles but also the channels of flows. These break down as:

Transportation vehicles - such as automobiles, trains, ships, airplanes, etc.
Movement Channels and Terminals - or the design and capacity of the channels of flow as well as the related terminal facilities.
Communication Nets - which include telephones, radio, television (open and closed circuit), etc.

Third, is the value framework underlying patterns of consumption and participation. It appears that the allocation of the following are reflection of these values.

Money - or the preferences of consumers for various goods and services, and
Time - or the participation in various and sundry activities.

Finally, absolute growth in people and the kinds and characteristics of people and person groups is another force affecting change.

Impact of forces on patterns

The foregoing subcategories are to be discussed individually relative to the impact that they may have on patterns.

Specialization implies an adjustment in the economic organization. It implies a dividing of an economic cell into two or more cells stimulated by the desire to perform the work more effectively and efficiently and/or by the desire to better supply expanding markets. Often this dividing of economic cells results in the establishment of new uses and products.

An illustration of this would be a blacksmith who not only made the horse shoes but also travelled around the country side shoeing the horses. A specialization would occur when as a result of expanding markets the blacksmith finds that he can best spend all of his time making shoes and that the shoeing of horses can best be handled by persons in the various sectors who pick up a supply of shoes periodically and spend the remainder of the time travelling about in their sector shoeing horses.

There are three important things which this illustration points up. First, it indicates the relationship between specialization and growth (of horses in this case although it could be people in a similar example). Second, it shows how the web of interdependencies becomes more complex as specialization increases. Third, and most significant, it points up the movement in space of the base of operations. In the case where the blacksmith did all of the work, he was the only enterprise and all of the work was handled from a central place. In the final stage where he only makes horseshoes there were a number of firms. There is the blacksmith who makes the shoes located still in the central place, but there are in addition several horse-shoeing enterprises located in the outlying sectors such that they are more closely related to markets. Thus, in some cases, specialization results or can result in the movement of some part of an enterprise from a central place where it does not have to be and can best perform its function in some other location.

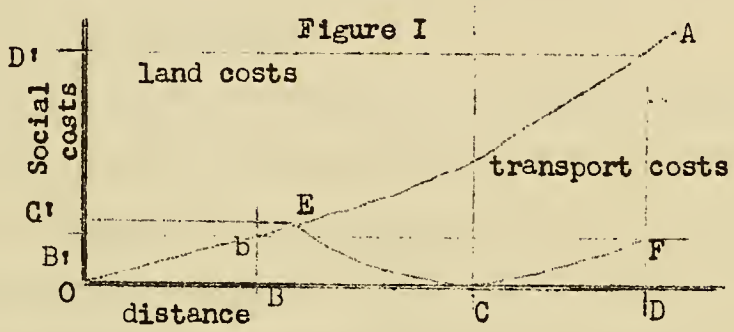
As an illustration of new uses that are generated by specialization . Consider a banking institution which invests in data processing equipment for the purpose of handling transactions. It may establish the data processing unit as a separate corporation thereby subdividing so that the unit can perform work for many other institutions for the purpose of increasing its productivity. It may be that the unit takes on additional work thereby rendering new services. The nature of this work might be to handle the personal finances of many individuals and firms by receiving directly all of the payments and income and making all or some of the required disbursements without bothering the business or individual. As such this would be a new use stimulated by specialization generated in part by technological advances.

Spatial Arrangements of activities may be considered as an array in which the individual activity seeks to minimize the friction of space in its dealings with other activities, markets, suppliers, etc. The illustration of the blacksmith indicates the spatial redistribution for the purpose of better serving the market. But the application of spatial redistribution is an essential and continuing part of the changing of the metropolis.

To demonstrate this the following hypothesis is delineated. Consider a metropolitan core during the early stages of the development of the metropolitan area. Initially, the size of the metro as measured in land area and in population is small. The range of services which a small sized population can support ih the core is small. In addition, the social costs of over coming the friction of space as measured by land rents and transportation costs, a la Haig, is small and the amount these costs can be reduced is less than the imputs for improvement, a la marginal product analysis and diminishing returns.

However, as the metro increases in size, the social costs increase due to longer distances travelled, congestion, delays, etc. and the range of services that the enlarged metro can support is increased. Thus, there are two pressures at work as the metro increases in size. The first of these is to make space available in the core for the new uses which the metro can support now and which tend to squeeze out or at least compete for the space occupied by the original activities. Secondly, there is a tendency for the uses which can be supported by a small population to move out of the core to outlying areas where they minimize the amount of travel to markets. This is illustrated in Figure I.

Figure I



Line OA represents the social costs of overcoming the friction of space as a function of distance from the core in any region with one center. As the metro grows from B to D, the pattern which was suitable for the smaller metro is not suitable for the larger. It will be noted that the social costs have risen from B' to D' as a result. Thus, there will be a tendency to locate activities at C for the purpose of reducing the social costs to C'. Line OEGF represents the new function which expresses the social costs of overcoming the friction of space in the region having two centers. In terms of the blacksmith example, line ob represents the costs of overcoming the friction of space when the blacksmith did all of the work himself and line OECF represents the cost when he only makes horseshoes.

Technological Developments or the substitution of capital for labor inputs for production while a function of relative price structure, future market prospects, and many other complex and hard to evaluate factors has had an impact on urban patterns. Over the long run, the impact has tended to be in the area of socio-economic patterns wherein certain types of job opportunities have contracted while others have expanded. In some cases, entire occupations have either been eliminated or greatly changed in substance. The result of these changes in the substance of the occupational structure over time have greatly affected worker productivity and incomes. Increases in real income have been one of the key generating derivative forces affecting social and physical patterns.

By and large incomes have increased over changes in prices and from our present vantage point it appears that worker productivity and thus income is due to increase in the future probably at a rate approaching the growth in Gross Regional Product. It has been demonstrated historically that decreases in the number of hours worked per week have accompanied increases in income. The hypothesis that is suggested by this observed relationship is that persons faced with increases in income, beyond a certain low point of bare subsistance, have chosen not to take the full increase in income but rather to take some of it in the form of leisure time.

Labor Force Skills or the development of proficiency of the workers over time has a similar effect of increasing productivity and thus income. However, labor force skills can be considered also as a regional resource. A most outstanding example of this is the attraction of the electronics industry to this area to take advantage of the skills which were made idle by the decline of the textile industry. It may be presumed that the skills represented in the local universities and in the businesses that are linked

to them also engender specialized skills which may form the basis for attracting existing uses in the nation, activities whose emphasis or scope is changin, and new uses based upon the emerging technology.

Transportation Vehicles such as the trains, trolleys, automobiles, airplanes, hydrofoil ships, etc. have exerted a significant effect upon the pattern physical, social and economic, from the time they were first introduced. Their impact stems from the accessability increases ceteris paribus and the opening of new frontiers in terms of markets, resources, specialization, labor force, etc. In doing this the key factor in accessability has been time, and in terms of alternative modes, cost.

One significant observation relative to the requirements of emerging new forms of transport is the increasing amount of space or land required for them and the inverse proportion between capacity and speed. It is interesting to note that the highest capacity mode, assuming an equal width of channel, is walking although this is perhaps the slowest mode. As speed increases with the use of trains and cars, the capacity of the system for a given width of channel decreases although speed increases.

For the future it may be hypothesized that increasing amounts of land, perhaps not in total but in width of channel, must be allocated to handle movement demands.

Movement Channels and Terminals are the sine qua non for the use of these emerging forms of rapid transportation. As such the provision of these are important tools in the growht and development of cities and the rural areas as well.

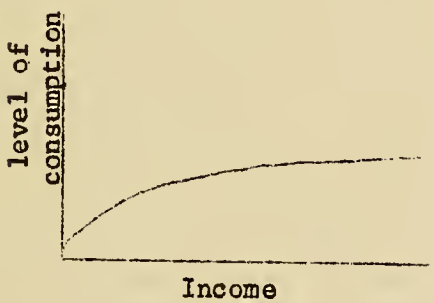
The impact of transportation improvements must be viewed not merely as the development of better vehicles but also the availability of channels in which these may move and the terminals at which they may be stored when not

in use. Planning for future capital design elements today apparently must address itself to two major considerations which are an important factor in their viability. The first of these is direction and some notion of the connection to be made and the level of service to be provided. Secondly, is the adaptability of the facility for the purpose of accommodating various modes not merely at one period in time but in a succession of periods wherein suitable modes vary.

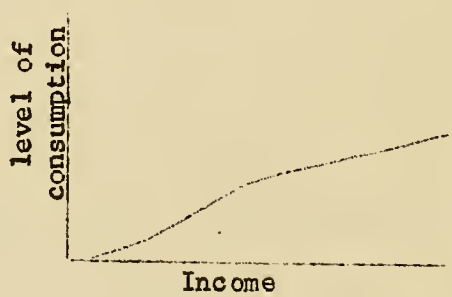
A movement channel as a capital element influencing the form and interrelationships in the city must be considered as a universal and timeless thing. It must not be designed to handle only automobiles as they are known today and/or a composit of trains or rapid transit. To be really timeless, they must be capable of accommodating other forms of vehicles such as hovercrafts and other unknown forms. Washington Street from Boston to Providence although it has persisted as a regional form for many centuries now is becomming powerless to influence development primarily because of its lack of adaptability.

Communication Nets seem to loom on the horizon as a force for greatly influencing patterns. Up to the present time their impact has been small, probably, relative to future prospects because of the archaic rate structure and early techniques. However, subsequently these limitations are expected to change (supposedly government has some control over them) such that it will become increasingly desirable for businesses and persons to substitute transportation inputs for communication inputs. In effect, this represents a shifting downward of the function in Figure I, representing the relation of the cost of overcoming the friction of space to distance traversed and a further provision of access to more distant areas,

Money or income allocations represents the effect of values held by persons and businesses and the changes in values, quite apart from income availability, also have an impact on the physical, social, and economic patterns. Aside from the values implicit in the leanings of Galbraith, the programs for foreign aid and aid to education, etc., we can make some general hypotheses about the impact of increased incomes. First, it might be hypothesized that the marginal elasticity of demand for certain types of goods is a function of income level. To illustrate this Figure II (a,b,c,d) may be drawn. Figure IIa shows the pattern of consumption of primary consumption goods (food, shelter) wherein at low income levels a high proportion of every increase in income is used to consume more primary consumption items. As income increases beyond a certain point the slope of the line decreases indicating that additional income as income increases is not being allocated to these items. Figure IIb shows the pattern of consumption as a function of income for secondary consumption items (manufactured goods). It will be noted that as increasing shares of increased income become available for secondary consumption only after primary consumption as a percentage of the increment declines. Finally in Figure IIc it will be noted that tertiary consumption items (soft goods and services) are desired as high standards are satisfied for primary and secondary goods and as income continues to expand.



II a



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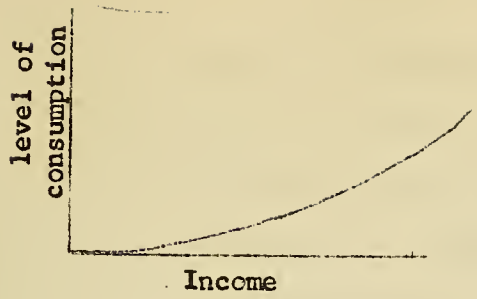

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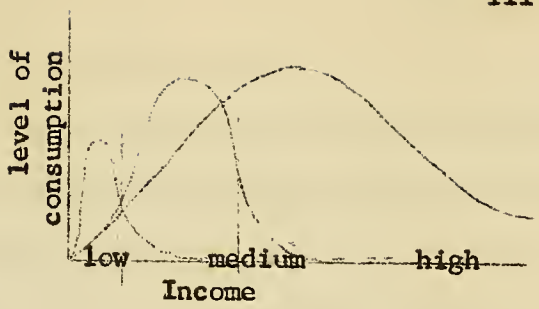

IId

In figure IId this is shown as a composite wherein lines a,b, and c, are indicative of the income distribution at three points in time. Line "a" indicates that incomes are low and that mostly primary goods are consumed with only small amounts of secondary and tertiary goods consumed. Line "b" shows the relationship to consumption as affluence increases indicating that demands for primary goods are essentially satisfied and stress is on secondary goods with the demand for tertiary goods increasing. Line "c" shows the distribution at a time of high affluence indicating a dramatic expansion of the tertiary sector.

It is important to consider what might be the impact on patterns of increasing affluence. First, increasing affluence might mean an increasing consumption of the services of land not only in the metro but in the vast hinter land beyond (i.e., more than one house per family, summer and winter or city and country; large lot sizes for privacy, swimming pools, increased ownership of land and the facilities on it by the persons who occupy it, etc.)

Second, increasing affluence might cause a general increase in the amount of money that is spent on transportation which may result in either or both more transportation or continued use of quicker and more expensive modes of transport. A desire to move through space more often presents a problem of taxing the existing facility system and perhaps the timeless qualities of it. A desire to use expensive modes of transportation might foster continued use of large cars (there is the potential that the situation could become much worse than it is now) as an individual or private mode

because of financial independence, more convenience, etc.

Third, there is the effect that changing income distribution and density on the land will have in the location of economic activity particularly the tertiary or service type. Questions arising in this regard are: What will be their locational preference? What will be the sizes of their market areas? What is the nature of the linkages to markets or to other elements in the economic web? Might the resulting pattern tend to move more towards a very fine grain of development without centralization to any significant extent. In any event, it is quite probable the patterns of economic activity with an increase in the tertiary sector are likely to differ from patterns with a lesser orientation to services, what are these differences?

Time is an important factor in influencing patterns especially when it is increased in leisure time. Increasing leisure time opens up for a large number of people the possibility of participation in new and old, strange and familiar, activities. How people choose to allocate their time is of course a reflection of their values. One of the possible outlets for increasing leisure time is the provision of more facilities for active recreation (a la Kennedy and physical fitness) by developing existing land more for this purpose and by providing additional land and facilities. In addition, passive forms of recreation also may expand rapidly because of increasing leisure time. This demand may stimulate the investment in stadiums and other things expressing the spirit of the times. Finally, what will be the impact if any of increasing hobbies, do-it-yourself, mental problems, crime, etc.

Growth in population locally in the metro is not expected to be rapid because of the position of Boston in the spatial array of economic activities

in the nation and in the world. A growth of about one percent per year is forecast although this could be upset by local actions. Over a forty-year period, however, it is estimated that an additional 300 square miles of land will be required to accommodate this growth within a smaller delineation of the metro. In terms of numbers, it is expected that population will double over the next forty years or so. Perhaps, the growth will be more spectacular if a larger regional delineation of the GBESC is taken. Their forecast for this area is for a growth of 300,000 from 1960 to 1970 with a 1970 population of 3.7 million.

Changing population characteristics are significant factors influencing patterns. Among the characteristics are age distribution and family size.

IV. Description of Present Metro-City and Problems

The inter-regional transport web may be generalized as a geometric pattern of the diagonals of a regular hexagon and is somewhat consistent with the theoretical patterns of Loesch and others. On the land the pattern is distorted by physiographic and resource factors. The exact alignments follow the topographical valleys, the shore lines and the river valleys. Hence the alignments are not exactly coincident with the diagonals of a regular hexagon although they are quite close.

Historically, Route #1 was a major channel from Providence on the southwest to Maine on the northwest. The old Route #3 alignment is the major facility linking the recreation areas of Cape Cod on the southeast and the White Mountains on the northwest. Completing the hexagonal structure are the western routes to Worcester and ultimately to New York. An abstraction of the major inter-regional facilities is shown in Figure 1.

Within the intersticies of the inter-regional facilities are the intra-regional transport routes. The alignment of these intra-regional facilities also follow the lines of least topographical resistance and tend to bisect the sector formed by the inter-regional facilities. Running north from Boston is the old Route #28 and to the south the new Fall River Expressway. These facilities link together Lawrence on the north and Brockton, Taunton, and Fall River on the south. To the west-northwest is Route #2 linking the area to Fitchburg and Leominster. To the west-southwest the pattern linking the area to Woonsocket is not clear in that a combination of routes accomplish this. In addition, two shore roads may be visualized as filling the space on either side of the non-existent eastern facility. This also is shown in Figure 1.

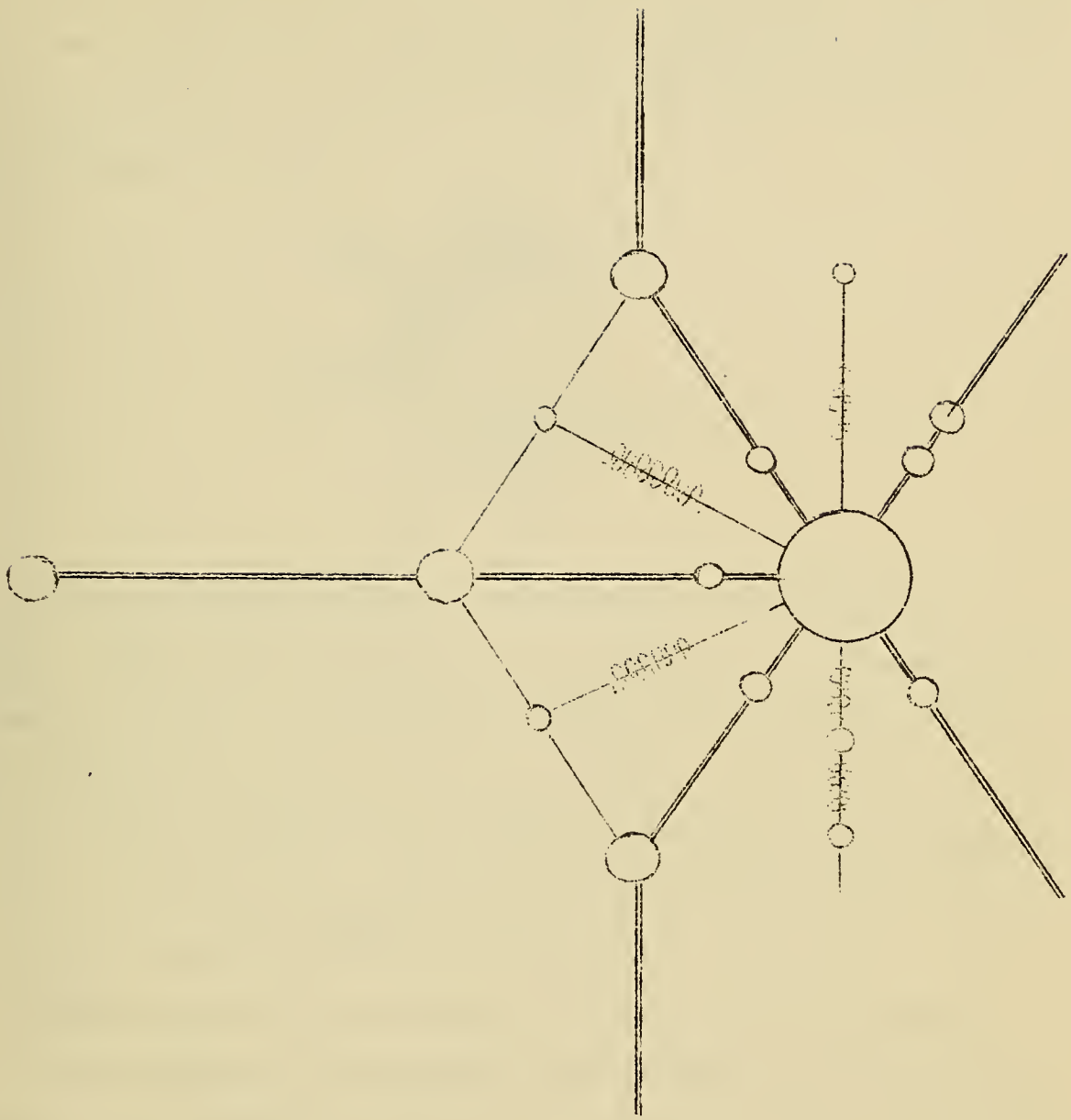

Figure 1. An Abstraction of the Major Inter- and Intra-Regional Facilities

The population of the Boston Standard Metropolitan Area (BSMA) increased from 1950 to 1960 by 7.4% while the population of the Boston City decreased by 13.0%.[1] This large decrease in the central city indicates that the growth in the SMA exclusive of the Boston City Area was high--in fact, 21%.[1] The pattern of residential development in the BSMA has followed the transportation pattern of the area:

In 1959, the total labor force of the BSMA was approximately one million. Twenty percent of these jobs was concentrated in Downtown Boston, twenty percent in the rest of the City, fifty percent in the area between Route #128 and the City, and 10% along Route #128. Another 375,000 jobs are located between Route #128 and the Greater Boston Economic Study Committee (GBESC) area. Thus, twenty percent of the BSMA jobs are located downtown, or only 14% of the total jobs in the GBESC area.

Within the BSMA, the distribution of these jobs is heavily weighed toward manufacturing and trading (37% and 30% respectively). Construction, transportation and utilities, finance, and service jobs each are about 7% of the total million.

The forces of productivity, resources, consumption, and growth have

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[1] Population Changes:

	Boston	BSMA
1950	801,444	2,363,545
1960	697,197	2,589,301

produced the physical, economic, and social patterns of this metro-city area. Their impact has been discussed in a preceeding section (III): Problems which have evolved from this impact of the forces upon the metro-city include:

1) The rate of growth of specialized schools has not met the needs of specialization
2) Specialization has caused a disruption of the home and work spatial relationship
3) Transportation patterns have not kept pace with the desired mobility of the population.
4) Transportation patterns and services have reacted to the dispersed population movement at a much slower pace.
5) Increasing incomes have produced a need for leisure time activities, but few places are available within a time limit and the standards are low in relation to the need.
6) Choice in housing to accommodate family cycles and the minority groups is not available.
7) The degree of flexibility in the economic composition of the Boston region is such that it does not allow changes in economic emphasis at a rate fast enough to allow it to meet the economic and social needs of the nation and the region.

While the impact of these forces has produced these very generalized problems for the metro-city, the impact on the Boston area has produced the following specific problems:

1) High taxes, especially real estate taxes

Many people who would like to own their homes are simply unable to to find houses in the $12-15,000 price range within Route 128 and the Core and they find that in many cases high land values and high property taxes make the monthly payments beyond their reach.

The economic base of the city has declined (causing property taxes to rise) as new industrial development has occurred in suburban industrial "parks" rather than in the city.

2) Low level of public services

City residents are aware of the low level of public service, as evidenced by the following:

a. Lack of adequate police protection and flourishing juvenile delinquency which tends to follow
b. Dirty streets and litter; inadequate refuse and garbage disposal provisions
c. Inadequate street lighting and traffic controls at acknowledged "bad" locations (e.g. Route 1 at Cottage Farm Bridge; Mass. Ave. and Columbus Ave., etc.)
d. General feeling that much of the money paid in taxes is being drained off in terms of waste, graft, etc.

3) Public School System

a. The elected school committee tends to involve school teachers in its political campaigns
b. Age and obsolescence of buildings
c. Lack of enough vigorous, young teachers
d. Lack of sufficient funds properly allocated

4) Transportation problems

a. Parking regulations and towing rules
b. Congestion downtown; lack of enough parking off-street
c. MTA problems: scheduling, finances, politics, inadequate service, etc.
d. Lack of adequately marked major routes, streets
e. Congestion at peak hour (anyplace), especially 1) downtown 2) Sumner Tunnel, involving airport travel

5) Problems relating to residential areas

a. Too many people living in a confined area (esp. true in the "grey" areas of the city: Charlestown, South End, Roxbury
b. Lack of enough parks and playgrounds with trained recreation leaders and programs for <u>all</u> ages
c. Lack of maintenance by absentee landlords; low level of home ownership (25% of d. u. are owner occupied)
d. Desire to "get out" of Boston; age of homes and lack of strong middle class in sufficient numbers for stability, civic interest, etc.

6) Political problems

a. Suspicion of public officials generally as corrupt

b. City v. metro area and state
   1. MTA and MDC financing problems: 65% of costs
   2. Suspicion of rural interests, vice-versa
c. Lack of control over police dept. and school committe spending
d. Separation of civic responsibility and capability (i.e., the decision-makers are non-residents, thus the average city resident feels (correctly) that he has lost the principle of self-government by electing his representative, since the real "power" groups who make the decisions are outside the city: financially, civically, etc.
e. Ethnic prejudice and pride

7) Desire to maintain the "Status Quo" (reflecting the New England characteristic of unwillingness to change or accept readily any new ways of doing things).

8) Dislike for "newcomers" and affectations of those from other regions (dislike for Southerners, New Yorkers, etc.)

9) Desire to maintain a certain amount of residential homogeneity (usually reflected by income, ethnic grouping, education and race)

10) Summarizing, a generalized feeling that Boston has become obsolescent, "bled" of its culture and vitality, its refinements and money; a victim of the 20th century forces and that it cannot or will not make the necessary adjustments—in spite of all the propaganda to the contrary:

a. the city has lost 13% of its population in '50
b. the city's tax base is shrinking; its value is declining

The reversals of these trends, if incipient, are not being perceived by the average city resident.

11) Perplexing "race" problem: the difficulty of assimilation of Negroes and Puerto Ricans into the mainstream of heterogeneous metro-culture. Unlike earlier immigrants upward movement of Negroes and Puerto Ricans is stymied by sanctions imposed by older, more "Americanized" groups. The problem of education, health, in-migration, jobs, etc. is terrific.

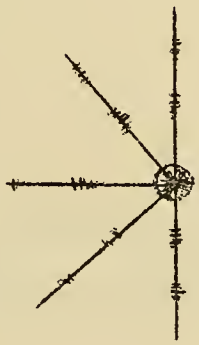
V. THE SCHEME

The basic approach formulated for positing what the nature of the Boston region should or will be in the future is a positive one. It is felt that there is only one aspect of Boston, both historically and in the present, that is so strong and so unique that it gives Boston and its area a reason for being; an image to the world. Of course, the Boston region has all the ingredients of a typical American metropolitan area. It has industry, retail services, mixed types of housing accommodation, recreation areas and a variety of ethnic, income, and social population groups. But these ingredients do not give Boston and its area a reason for being. The same combination of industry, retail, housing, recreation and population could conceivably occur anywhere else on the New England Seaboard and the resulting city would not be any more or less renowned than Boston is today.

Our position is that one can't make comprehensive and internally valid plans for a city or metropolitan area unless there is a concept of a "higher aspiration" for the city and area, a concept that is so strong and so right that it can remain as a goal throughout time even though the forces working in the environment or the values of the populace may change. Without doubt, one can make an efficient plan or an attractive plan for an area. But the products of such a planning process too often relate only to the solving of immediate environmental problems and have within them no directional momentum toward the attainment of a "higher aspiration." We feel that from a concept of a "high aspiration" can come the ideas and sticks and stones that make a city. The one strong and unique quality of Boston is its function and image as a place of ideas; a place where all men of all disciplines, professions and vocations can meet to share and contribute knowledge. This is Boston's reason for being. This is the "higher aspiration" that we have for Boston.

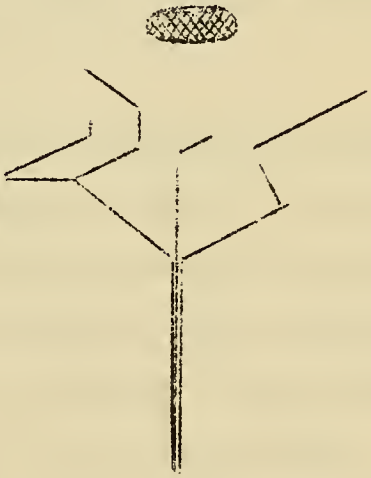
Thus, the attempt of all planning is to develop and strengthen this place of ideas. The exact physical form and environmental relationships that will have to exist in the immediate Boston area is subject to question. There are at least several concrete plan alternatives which would allow Boston to function as a place of ideas. We have selected one concrete plan and at this time belive it to be the best. In the same way, there are many concrete regional plan alternatives which would allow Boston to function as a place of ideas. We have selected seven such plans and have described the forces and values which must have operated to produce them and which are likely operating within them. Moreover, there is an attempt to define what some of the characteristics of the plan alternative may be.

The notion that there is no one city or regional plan that must occur in order to gain our place of ideas is an important one and deserves further comment. We maintain that at the present there exists in Boston a basic regional structure that in effect is a skeleton upon which a number of different bodies or physical forms may be hung. Of course, these physical forms are the product of a number of forces and values inter-acting with a physical form being only one of a number of final products. This basic skeletal structure is shown below. The focus of attention for planning purposes in relation to this skeleton



crystal dot

is two-fold. The first is to immediately initiate action, based on our notion of a "high aspiration," which will promote the attainment of the place of ideas. It is recognized that the first step of action to achieve the place of ideas may not necessarily have to be taken within the place of ideas area. An action taken far out in the region may indirectly have an effect on the nature of the place of ideas area far greater than an action taken directly in the place of ideas area. The second is to order and augment the existing skeleton to such an extent that it, as a basic form, will allow the change in the forces and values that will be at play in the future to manifest itself comfortably to the existing skeleton. A metphore would liken the trunk of the tree to the present and immediate future; the period for which we have a relatively good notion of what the inter-acting forces and values may be. In the main, the trends of today are acting in a manner consistent with the basic skeleton. The limbs and branches would represent the form directions that



could be taken at some time after the immediate short range as a result of a particular combination of forces and values that will arise at a future date.

To repeat, there is no one branch or plan alternative which alone leads to the attainment of the place of ideas. It could be any of a number of branches or plan alternatives. As a matter of fact, the skeleton is to be constructed so that over a period of time the form manifestation of inter-acting forces and variables can switch emphasis from one or the other of the branches or alternative plans depending on the current situation. Regardless of the alternatives that may take place from branch to branch, the place of ideas will till function and maintain itself.

There are, however, several key criteria paramount to the success of the place of ideas. These paramount criteria must operate in the desired fashion in any one of the bodies placed on the skeleton. These criteria are vital to all of the branches or plan alternatives. With their absence the place of ideas could not function and maintain itself. With these criteria in operation the place of ideas can be nourished and developed. The nature of all these criteria is not now known. One major criteria which we do know is the following principle:

1) Accessibility to the place of ideas must be increased while at the same time the need for any individual to come to the place of ideas for purposes which are not directly related to that which is the essence of the nature of the place of ideas must be decreased. The exact way in which this can be brought about is still to be developed. Some initial means to achieve this principle will be discussed in the following pages. There are likely other criteria having to do with economic and social relationships and standards. Hopefully, these can be revitalized soon.

Even though our knowledge is incomplete, we know the forces now acting upon and within Boston much better than we know the forces that will act upon and within Boston at some future date. There are a number of trends which

are occurring now that we can be fairly sure will continue for the next 15-20 years, barring any major unforeseen events. These are the following:

a. The family will probably be somewhat larger.

b. Increased life-span will result in more older persons.

c. Increased population following World War II will result in still further population expansion.

d. Rising incomes will encourage family formation.

e. Greater stress on education will slightly delay family formation.

f. Scientific research will increase the level of healthiness.

g. The work week will be 4 days, or less.

h. Greater leisure will stimulate the need for leisure-time activities:

education, crafts, do-it-yourself, art, music, drama, movies, sports, reading, etc.

i. Car ownership will increase as will boat, airplane and perhaps other vehicular transports.

j. As incomes and living standards rise, an entirely new market for consumer goods will be created.

k. Technological change will create problems of worker displacement; if we cannot find enough new jobs, the increased role of women in the labor force may be dampened, or even reversed.

l. Increased specialization in industry with accompanying development of specialized skills on the part of the labor force.

We wish to gain command over these trends so that they can be used to solve present area problems and so that they, when manipulated in proper combinations, can foster a clear but flexible pattern for the Boston area. This pattern can be likened to the trunk of the tree. We must nourish this trunk so that in the near future (15-20 years), new combinations of forces can begin to mold some new regional form (a limb) upon the basic skeleton (trunk). A proposed definite action program for the next 15-20 years will be discussed on a later page.

There are a great number of alternative patterns possible for the Boston area in the future. We have posited, in order to gain some concrete images and to have some springboards for further analysis, seven basic alternative schemes which represent our notions of the pattern that seven different combinations of forces and values might take. Thus, in order to limit the great number of possible alternatives, we have inserted our preferences in selecting only seven. Further investigation might prove us to be wrong in our selections or in the reasons for our selection.

The patterns shown below are extremely abstract and are meant to relate dominant emphasis rather than exact physical patterns. Thus the pattern called Coastal Exploitation might not necessarily imply greatest population densities along the coast, but might imply that the focal point of public investment takes place in this area. A list of the major forces which would produce each pattern, as well as the major characteristics of each pattern, is presented for all seven alternatives. It is acknowledged that certain forces and characteristics would probably be common to all alternatives. The list, therefore, includes only those items which are very powerful and somewhat unique to the specific alternative. One of the seven regional alternatives is explained in a thorough manner at the end of this report. (See patterns on next page)

1) Coastal Exploitation

Dominant Forces Which Form the Pattern:

a. A greater interest in water activities

b. The desire to spend more leisure time close to home.

c. Federal-State aid to effectuate

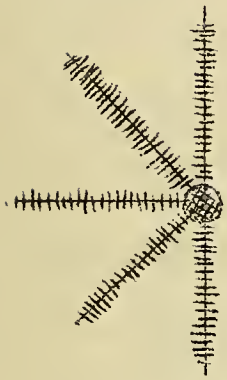
Major Characteristics of the Pattern:

a. A dominant north-south transportation axis

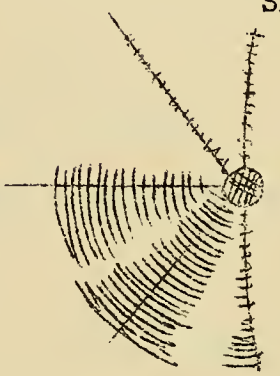
ALTERNATIVE PATTERNS

#1. COASTAL EXPLOITATION

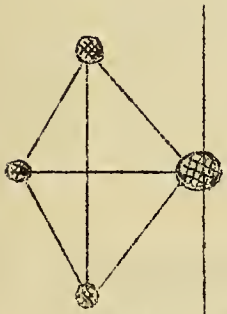
#2. CIRCUMFERENTIAL REGIONAL SPECIALIZATION



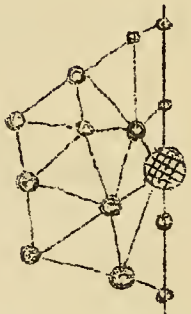
#3. RADIAL REGIONAL SPECIALIZATION



#4. NEW YORK DEPENDENCY



#5. CONCENTRATED REGIONAL SPECIALIZATION



#6. DISPERSED REGIONAL SPECIALIZATION

#7. CONCENTRATED NATIONAL SPECIALIZATION

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b. An emphasis on population increases on the coast line

c. The ability of the lower income groups to take advantage of this resource

d. No dominant industrial ties with New York and the West

e. Few strong specialization centers

f. Greater dispersion of population within the interior

g. A major shift in economic base to service type industries.

2) Circumferential Regional Specialization

Dominant Forces Which Form the Pattern:

a. A greater interest in production for the region

b. A greater desire for communication within the region

c. An equivalent interest in water and inland recreation with an emphasis to coordinate the two interests

Major Characteristics of the Pattern:

a. Equally important circumferential and north-south transportation patterns

b. Equal emphasis of population distribution on the coast and in the circumferential belts

c. No dominant industrial ties with New York and the West, but rather economic ties within the region and with Boston

d. Few strong specialization centers

e. A continuance of the economic base as production oriented.

3) Radial Regional Specialization

Dominant Forces Which Form the Pattern:

a. A greater interest in production for the region.

b. Less desire for communication within the region

c. An equivalent interest in water and inland recreation.

Major Characteristics of the Pattern:

a. A dominant radial pattern

b. Equal emphasis of population distribution on the coast and in the sectors

c. Stronger economic ties with the region than with New York and the west; emphasized major ties within the region

d. A continuation of the economic base as production oriented.

4) New York Dependency

Dominant Forces Which Form the Pattern:

a. A greater interest in national production with the focus toward New York and the West

b. Less desire to communicate within the region and a greater desire to communicate with New York and the West

c. An equivalent interest in water and inland recreation

Major Characteristics of the Pattern:

a. A dominant west-southwest radial pattern

b. An emphasis on population distribution within the west-southwest sector

c. Weaker economic ties with the region than with New York

d. Few strong points of specialization.

5) Concentrated Regional Specialization (This alternative is analyzed in detail in Appendix II)

Dominant Forces Which Form the Pattern:

a. A greater interest in regional specialization concentrated at a few points

b. A greater desire to communicate within the nodes, less desire to communicate with New York and the West

c. An equivalent interest in water and inland recreation.

Major Characteristics of the Pattern:

a. Dominant intra-dependency of the specialized nodes

b. A stronger emphasis on population distribution immediately around the nodes

c. Strong inter-dependent economic ties within the nodes, strong intra-dependent economic ties within the region, and no emphasis on national economic ties

d. Several large points of economic specialization with many smaller points surrounding the larger node

e. Less choice of a variety of living environments.

6) Dispersed Regional Specialization

Dominant Forces Which Form the Pattern:

a. A greater interest in regional specialization concentrated at many points

b. A greater desire to communicate with other nodes with little emphasis on communication with New York and the West

c. An equivalent interest in water and inland recreation

Major Characteristics of the Pattern:

a. A dominant intra-dependency of the specialized nodes

b. An equal distribution of population within the region with a slightly stronger emphasis around the nodes.

c. Stronger intra-dependent economic ties within the region than with the nation

d. Many points of economic specialization

e. Choice of a variety of living environments.

7) Concentrated National Specialization

Dominant Forces Which Form the Pattern:

a. A greater interest in national specialization at a few points

b. A greater desire to communicate within the nodes and with the nation than with the region

c. An equivalent interest in water and inland recreation

Major Characteristics of the Pattern:

a. A dominant dependency of the nodes upon the nation rather than the region

b. A stronger emphasis on population distribution immediately around the nodes

c. Several large points of economic specialization with many smaller points surrounding these nodes.

d. Less choice of a variety of living environments

VI. The Place of Ideas

The place of ideas is a two mile core in which the present CBD is but one event of a number of events--all of which are significant elements of a message-giving character.

The location of activity centers is determined by a struggle between the attractive forces of topography and the search for profits. Therefore, the distribution of activities at all levels must relate to both of these forces if the region is to be balanced.

The first step in creating a balanced environment is the exploitation of topographical events. (See Appendix I for a discussion of the metro-city physiography.) The attempt has been to concentrate our resources (time and money) into the radial valleys, the industrial belt (Route #128), and the enlarged notion of core. Among the many effects of this approach are the following:

1. bringing of service activities to the hinterland
2. relocating certain functions not properly belonging in the core area to areas outside, thus making room in the core area for the resettlement or expansion of functions that are of regional and national importance
3. redirecting the flow of people and their products so as to cancel out much of the existing overloads.

VII. Programming

The actual development of strategies required to bring to fruition the images proposed here, are beyond the scope of this first sketch. However, some preliminary considerations and ideas have been developed, some of which are the following:

(1) The accessibility to the core must be increased.

(2) The necessity for movement to the core must be decreased.

(3) Movement in general must be more evenly distributed among the various nodes.

Within Roxbury the attempt to achieve the above is manifested by the following actions:

(1) The establishment of a new sub-core at the South-west corner of Roxbury, serving Roxbury and adjacent areas.

(2) The redistribution of population in Roxbury so as to concentrate much of it near the new core.

(3) The establishment of a communication and activity Band (to include Work Places) along the western boundary of the area.

(4) The redistribution of service centers within Roxbury.

(5) The development of that area of the regional core which begins at the north end of Roxbury.

The one which would receive the earliest renewal expenditures is the last one. Both psychologically and functionally, the area that the entire region and especially Boston would most easily identify with is our new image of the regional core. An early emphasis on this area would gain the confindence of the public in the renewal program, and would indicate plainly some of the key aims of the program. However, in order to effect this action it is necessary to make a place, outside the regional core, for those functions which will be

displaced by the elements of our new image. To do this, the first four actions proposed on the above list are necessary. While in fact these actions may take place at the same time as the fifth one, they are, by some measure, secondary.

Appendix I - Physiographic Principles

The Boston Metropolitan Area:

The climatic factors which affect body comfort are air movement, air temperature and relative humidity. Within the Boston metropolitan area temperature is not excessive. However when combined with humidity and little air movement body discomfort is experienced. If an effort is to be made to improve the climatic conditions, it would appear most feasible to concentrate an increased air movement.

Two major air movement systems are present in the area; the prevailing westerlies and the afternoon off-shore breezes. During the day the land surface tends to heat at a more rapid rate than water, causing a vertical movement of warm air and at the same time reinforcing the movement of cool air from Boston Harbor. At night this process reverses itself; the water remains warmer than the land surface (except in high density urban areas), causing a vertical movement of warm air over the harbor which induces a movement of cooler air from the land (and reinforces the prevailing westerly winds).

It is proposed that our efforts should be directed at further developing this air current system which in general reverses itself once every twenty-four hours. In fact, a sort of two unit cooling system seems possible. By establishing an upland cover area (Sponge) and utilizing the valleys and waterways, it is possible to maximize the ameliorating effect of air movement - hence increasing body comfort.

Once the idea of a two unit system has been accepted it remains to develop an activities relationship which best utilizes this concept. In this respect land based activities may be classified according to their radiant heat rate. Thus commercial activities and other high density development, together with paved surfaces must be considered as heat generators; whereas low density development and areas of plant cover act in an opposite manner. In recognition of this it is submitted that in general the sequence of activities should be as follows:

water - high density development - low density development - upland plant material cover areas

The results of this relationship are two fold; a maximization of body comfort due to increased air movement, and an increase in the overall capacity of the system.

Communities within the Boston Metropolitan Area:

When one begins to consider these physiographic principles at the co m-munity level (micro scale), the system described above may also be followed. Since air tends to rise up an inclined surface during the day and move down an inclined surface at night we can visualize the valleys as cool air supply ducts during the day and return air ducts at night. Thus the activities relationship which was developed for the metropolitan area applies here also.

The establishment of upland plant material "sponges" at the micro scale will fulfill several functions. In addition to providing the community with an evening cooling "generator", the sponges reduce the rate of precipitation runoff; thus allowing for greater evaporation (further cooling) and increased ground water supply (relieving to some extent surface water demand).

One element remains to be considered, that of vehicular transportation facilities. Ideally, we would wish to provide a structure in which the air movement system and the transportation facilities system were independent; thus allowing for a relatively pure air supply at all times. In some cases this is not feasible, however, since the valleys often provide the most satisfactory road beds. Where this condition prevail s the daytime air supply is mixed with impurities of the transportation systems. (In order to relieve this condition it is proposed that these movement channels be provided with plant material "filters" which in effect will tend to screen out impurities while replenishing oxygen content.

Where topographical conditions allow for more flexibility in the location of major transportation facilities, the fact that south facing slopes are characterized by higher temperate peaks should be utilized. To locate these facilities on south facing slopes will affectuate to some degree a "natural" snow removal system and reduce the dangers brought about by fog and frost pockets present in the valleys.

APPENDIX II. - Detailed Analysis of Alternative #5.

Summary

The basic intermeshing of this Metro-City scheme relies on two important principles, one assumption and one goal. The first principle is the rationalization of land use function and location for the metropolitan area as a whole. The second principle is the establishment of a rational hierarchy of transportation to serve the functions proposed. The assumption is that by 1980, there will be over 4 million persons depending on this area for living, working, and recreating. The goal--to provide for the BMA a voluntary extension of 25 miles in distance and 30 minutes in time establishing here a human community where choice is maximized, friction minimized and needs satisfied.

The skeleton of the structure is outlined below.

Landuse Functions and Locations

A. City of Distribution--at Rt. 110 (or 495) in the vicinity of the Massachusetts turnpike intersection.

1. Collect and distribute all goods coming and going to and from the Boston area; the heart of the BMA.

B. City of ideas--at the hub, bounded by the harbor and the Inner Belt.

1. To produce ideas, the brain of the BMA.
2. To be balanced by a Tivoli located perhaps at the Old Sommerville Rail yards.
3. To house the core or main branch of all institutions--medical, educational, cultural, financial and governmental.

C. Cities of Work--one at Lowell in vicinity of Intersection of 110 and Rt. 3, one at vicinity of Intersection 110 and Connecticut turnpike

extension to Boston. Both to become demonstration and testing units for technological frontiers, emanating from the City of Ideas; the applied laboratory of the BMA.

1. To house industries to the North in quest of hydro-electric power and water resource.
2. To house light manufacturing to the south with quick access to Providence, New York, and Boston.

D. High density area complemented by lower density suburban character which exists:

1. To house idea nodes (branches of institutions having main functions within City of Ideas).
2. To be the "clinics" where new ideas are applied, to decentralize these main institutions for "general people use," and permit the central branches to specialize in research and more abstract level work.
3. To become the dynamic urban area for living, for people oriented services and for urban community events.

E. Low density, rural area complemented by more intense spotty suburban development.

1. To house overflow of suburban dwellers who choose for living the split-level, single family house.
2. To preserve the Old New England town character and the unique land and water formations for the use and establishment of tourist activity of high intensity.

Transportation Hierarchy

A. Non-stop expressways and rapid rail transit - high speed.
1. Serving principally three directions.
2. Functioning as major connectors and major links for outgoing and in-coming goods, services and ideas.
3. Where intersected - Rt. 110, by next level of road - events occur of auto-oriented tourist and vacation nature, i.e., motels, restaurants, and so on.
4. At interstitial points along Rt. 110 occur events requiring large land and few employees, i.e., power plants, water and electric supply stations and so on.

B. Rythymic Roads - Intermediate speed.
1. Radiating in all directions from Inner Belt outward.
2. Functioning as intermediary channels between and among the various sectors.
3. Where intersected - at Inner Belt, parking areas for change to MTA for trip to core:
   At Rt. 110, tourist services
   In vicinity of Rt. 128, regional shopping events.
4. Through inner areas within Rt. 128 occur Idea Nodes at old centers, i.e., Watertown Squares, Dudley Centers, etc.
5. Through outer areas within Rt. 110 occur public sectors, smaller scale to house schools, playgrounds, etc.

C. Feeders and Collectors - low speed.
1. Servicing residential use in all areas, servicing institutions in core.

D. Tourist Roads - low speed.
1. Connecting old town centers within Rt. 110, and giving access to water and land resources.
2. Functioning as scenic routes for tourist and vacation traffic.

E. Pedestrian Circulation
1. Within Government and Finance Center, a 10-minute walking radius.
2. Already occurs in regional shopping centers.
3. Likely to become again a part of old centers and squares.

F. Rapid Transit
1. High speed rapid rail to Cities of Work and Distribution from Core City.
2. Circular system on rim of Government and Financial Node, with radials out to Inner Belt.

All land use functions and the differentiation of road and rail networks rest upon the existence of the others. All elements are interdependent. The scheme exists as a total concept based on one assumption, one goal and two principles all of which have been outlined above in summary form and expanded below as a theoretical framework.

Introduction

As an educational, medical, and research oriented center, Boston achieves distinction on a national level. It is a city where ideas are produced for world consumption, reaching prominence beyond even national boundaries. As a functional entity, Boston ranks high among the great cities of the world.

On a regional scale, Boston again is of key importance. Its financial district serves all of New England and along the Eastern seaboard is subsidiary only to Wall Street. The city is a transportation, communication, distribution center for a wide hinterland, stretching as far as Canada to the north, the Hudson to the west, and reaching southward into parts of Connecticut. Besides providing services of this nature, Boston and its immediate environs attract thousands of tourists and vacationers to its varied historic and recreation areas. With over 3 million persons in its metropolitan area, Boston becomes synonymous with New England. As both gateway and artery, Boston's continued vitality is life central to either the maturation or decay of the historic Northeast.

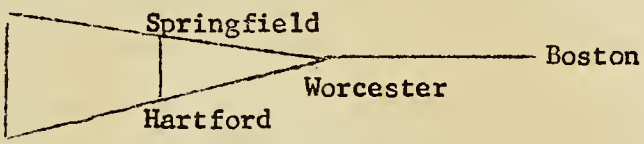
The seeds of vitality are here. They have been touched upon above. At the same time, lack of foresight, neglect of trouble spots, and missetting of priorities easily sets in motion forces of decay.

On the other hand, if we capitalize on nascent elements, as they affect the whole mechanism, much hope remains for Boston and its metropolitan area.

City of Distribution

Problem - The Port of Boston is dead as a transporter of goods avenue. The railroad too, as a mover of freight, is likewise dead. Because of Federal rate inequities in the former, lack of direct routes west in the latter, the roads as movers of goods have catapulted into prime position here. Our existing roads, having no pronounced differentiation, serve all purposes and subsequently serve no one purpose efficiently.

Comment - In order to minimize friction, roads must achieve a hierarchy of purpose. This necesitates a rationalization of land use function and location in regard to the metropolitan area as a whole.



Solution - Create a City of Distribution where Rt. 110 is closest to streams of goods movement from Albany and New York. Build up a freight air terminal in this vicinity to supplement Logan and complement truck transport.

Implication - A focus of this sort to the west would relieve a great deal of pressure from the Boston hub. Trucks could bring in and take out goods without having to pass through high density sections of the area. Logan could become a people's airport and a specialized freight air terminal for transporting low bulk, high value goods would serve as an alternate life gateway to Boston.

City of Ideas

Problem - For a city that is as unique in possession of educational, medical, research and idea producing institutions as Boston, the esteem in which it is held by residents of the metropolitan area is appallingly low. There is more being produced in this hub for national, regional, and world consumption than there is for tangible local and metropolitan use.

Comment - In order for this city to act as symbol and center of its immediate area, it must become a pleasant and attractive place to frequent. Its pull must be felt in the metropolitan area as well as in the world.

Solution - Create a City of Ideas, a symbolic basin of contemplation, but balance it with a Tivoli, with the great disquiet of entertainment. Close out cars inside the 10-minute walking radius of the financial and government center. Service this periphery with an efficient MTA belt, crossing and linking the in-town residential sections to the places of culture on this outer rim. Continue the radial MTA beyond this point in three directions, north, west, and south utilizing the existing rail rights of way. At other

points provide for parking of vehicles so that only vehicular trips of a service nature penetrate within. Establish a wage tax to supplement the cities' traditional financial mechanism to provide for the hub.

Implication - With the constant expansion of medical and educational, financial and government institutions within the hub with its concomitant specialization towards research and core activities. A system of Demonstration Units and Idea Modes become feasible, indeed are demanded. The impact of these Decentralized Units and Idea Modes tied to its parent organization enriches the metropolitan area.

Cities of Work

Problem - The recreation potential of the Massachusetts area and the New England region is acknowledged. The access to these areas is less certain. We have not capitalized on our competative position in regard to our natural setting in attracting business and industry.

Comment - A strong factor in plant location in more recent years has been that of area recreation potential. As working hours become shorter and leisure hours increase, executives look for the strategic site for competing more effectively in the labor force market.

Solution - Create a City of Work, one to the north, one to the south, each having its unique locational opportunities, both affording direct access to areas of play and ideas. To the north, with the development of hydro-electric power and the existence of the water resource in the Merrimack River, with a close tie to the City of Ideas and the City of Distribution, a sympathetic industry could develop. To the south, also with a strong tie through road and rail to the hub and the City of Distribution, a different kind of manufacturing than that to the north could develop. The proximity to New York, Providence, Boston, Naragansett Bay, and Cape Cod could encourage the location here of a type of light industry that has been coming increasingly to this area. With the City of Ideas producing efficiently, the businesses and industries locating to the north and south can become Demonstration Units par excellence. With immediate access to new technological and research development, these Cities of Work can become the testing and demonstration grounds for the world.

Implication - The Cities of Work and Distribution would themselves inject life into the areas in which they locate. To the north the Lowell, Lawrence area has been seriously on the decline for a number of years. The Fall River, New Bedford area is currently one of the most depressed areas in the country. The advent of new business and industry could, besides revitalizing service trades, also make use of a skilled labor force presently operating at much less than full capacity. With strong systems of transport and communication, Boston becomes a much more accessible spot for these satellite populations. Because it is so closely tied to these new centers as demonstration units for new ideas the connection of hub and satellite core becomes more tangible. Those businesses and industries which need many employees and large land tracts would seek locations in or near these new Cities of Work.

Intense Urban Sector

Problem - The area between the proposed Inner Belt and Route 120 has been growing in population at a much slower rate than outlying areas and in many instances has been losing population from decade to decade. Yet, within many of these communities there exists fine school systems, well managed community facilities and utilities, and reasonably good connections with the hub. These communities are more dense than those beyond, they do have less land for new housing and they are noted for larger, older house types, not particularly desired for single family occupancy. These communities also have activity centers which seem to occur on radial routes out from the hub, setting up a rythmic course of events as one approaches the major event of in-town-Boston. Through these activity centers in and out go all types of traffic bound for near or distant points. The effect of this kind of indiscriminate use has virtually choked the centers and sent its would-be users to the more efficient, more auto-pedestrian differentiated regional shopping centers. The criss-cross of traffic and unrelated activities has also tended to chase from these once quiet, pleasant communities the old residents who again search out a bit of peace and repose further out.

Comment - The results of these chaotic conditions are now a part of us. The regional shopping center is and will continue to be with us. Those residents who have left have made new niches elsewhere. In order to maximize choice, however, it is necessary to restore order to these well-established places where investment has been so heavy and tradition so well laid down.

Solution - By establishing a hierarchy of road and transport pattern, complemented by a more rational attempt at functional metropolitan siting, much of the strain and friction that is placed on these inner towns will be relieved. As the regional shopping centers continue to appear the community centers will continue to feel the impact in decreased sales. However, through positive action, an attempt can be made to strengthen their competitive position. As Demonstration Units in business and industry are established in the Cities of Work, similarly it is suggested that Idea Nodes be established in our inner communities. These nodes would take the form of branch clinics, branch libraries, branch colleges, branch musical experiment groups and schools, and so on. The services which these new activities would generate would inject an economic stimulant into the fabric of the various towns. New housing in the form of high rise apartment structures could be sited at the crest of the escarpment of the foothills and become, because of the view, central location, good air, etc., the most desirable high density area in the city, competing only with the similar high density area surrounding the harbor and government and finance center in the City of Ideas. The new, rather than destroy the old, enriches and preserves. Business which needs little land and many employees could well locate here.

Implication - The linear rythmic situation which has naturally developed through the centuries along radial routes into the hub would be preserved. These activity cores by being bolstered by Idea Nodes not only continue to exist but readjust themselves to new activities implied by a changing society. The positive encouragement of high density dwellings further reinforces this segment of the metropolitan area as a dynamic urban center, delicately balanced by its suburban character of today.

Problem - The rural communities beyond Rt. 128 which have in the last ten to twenty years experienced the greatest growing pains in the entire metropolitan area are rapidly losing their historic charm, their pleasant countryside and their solvency to face the future. The torrid trek outward for peace and repose winds up in cold disillusionment and causes a hop movement by the next wave of migration into greener pastures beyond.

Comment - A high cost this is for any responsible public to pay for the shoddy satisfaction of human needs on the part of government and the private sector.

As low density areas many of these towns will so remain because of the economic unbuildable land they have in wetlands, over 10% slope in topography and in lakes streams and ponds. Developers look for reasonably flat, dry terrain on which to build. Indeed much of this does exist and it is with an eye here that the recommendations are set forth below.

Solution - As development continues in the form of single family homes through the rural area a balance must be achieved between the old and the new. Facilities must be provided by cooperative efforts between two or more adjacent towns if bankruptcy is to be averted. The wonderful features of the landscape must be protected and preserved. The town common with its church and town hall not only has historic and aesthetic elements connected with its preservation, but symbolic elements as well. In order to protect the old from encroachment upon by the new, the new developments will be channeled or tied to a road network which will be of a different nature than the two-lane tourist routes that will link one old town center with another. The roads to service and channel new developments will have tied to them sectors for new school, playground, community center developments and so on, as well as sectors for convenient shopping development. The public sector will occur at places where two or more town boundaries intersect and the cost of these facilities will be shared by the towns involved. There already exists state legislation which gives financial incentives to this type of cooperate effort between cities and towns in Massachusetts. The final recommendation rests with the preservation of land and water resources for recreation of all sorts. Once development rights are purchased at a nominal cost, a string of green fingers will establish themselves following stream and river beds into the more dense sections inside Rt. 128 and wind themselves inward as parkways and river bank development until visually there rests before us the City of Ideas. The Bay circuit is a beginning in preserving the rural character of this area. Its methods should be used as a guide for further conservation of resources.

Implication - A rural area is preserved, complementing suburban development in the metropolitan area. The historic roots of New England become accessible to the vacationer through the network of tourist routes. A museum that is alive and functioning becomes an injector of economic vitality so that history and recreation, our largest resource, is at once our most lucrative business.